

FIG. 2

FIG. 3

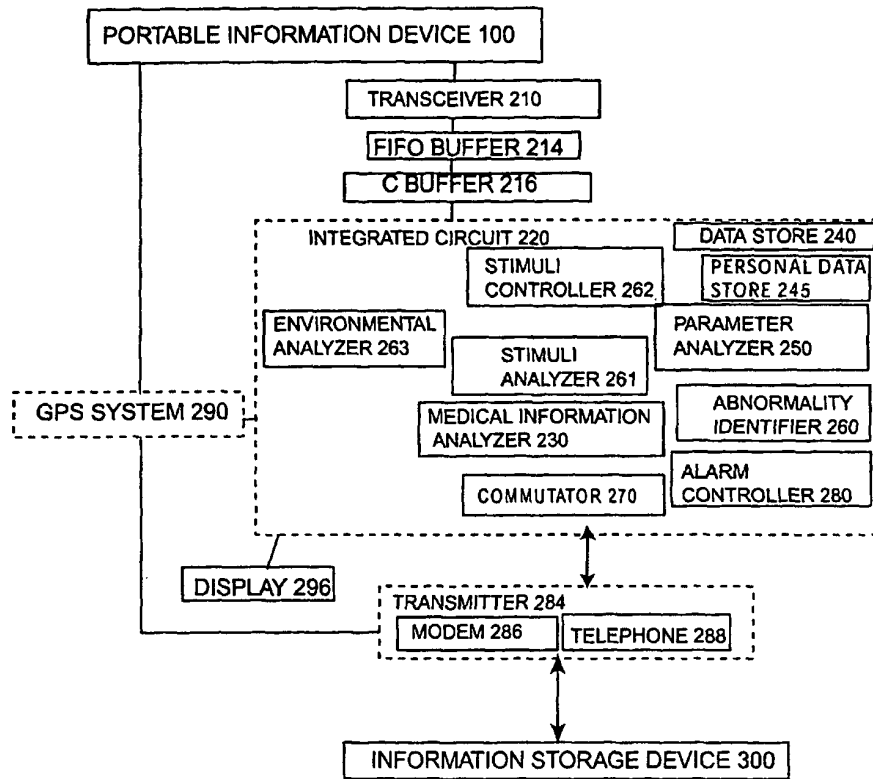


FIG. 4

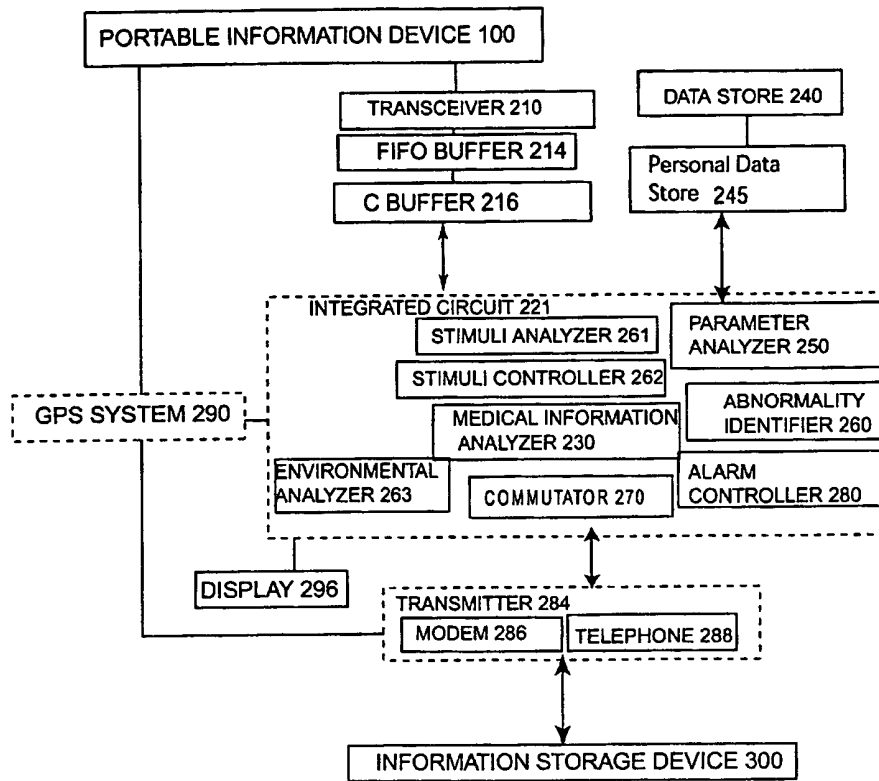
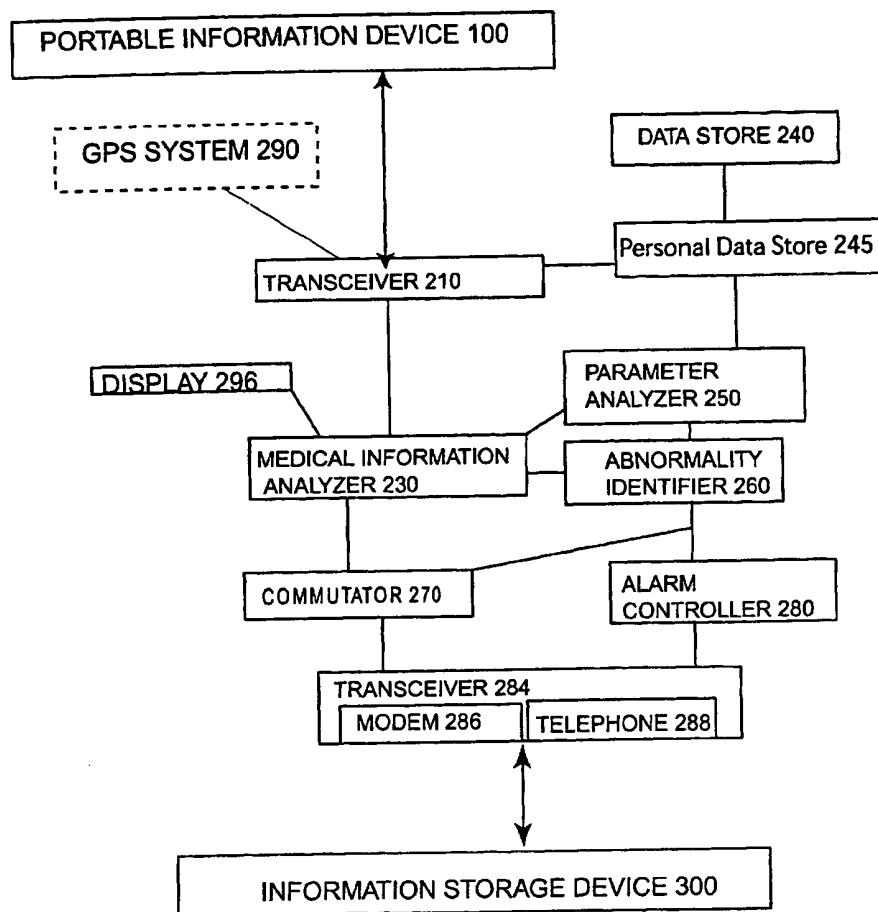


FIG. 5



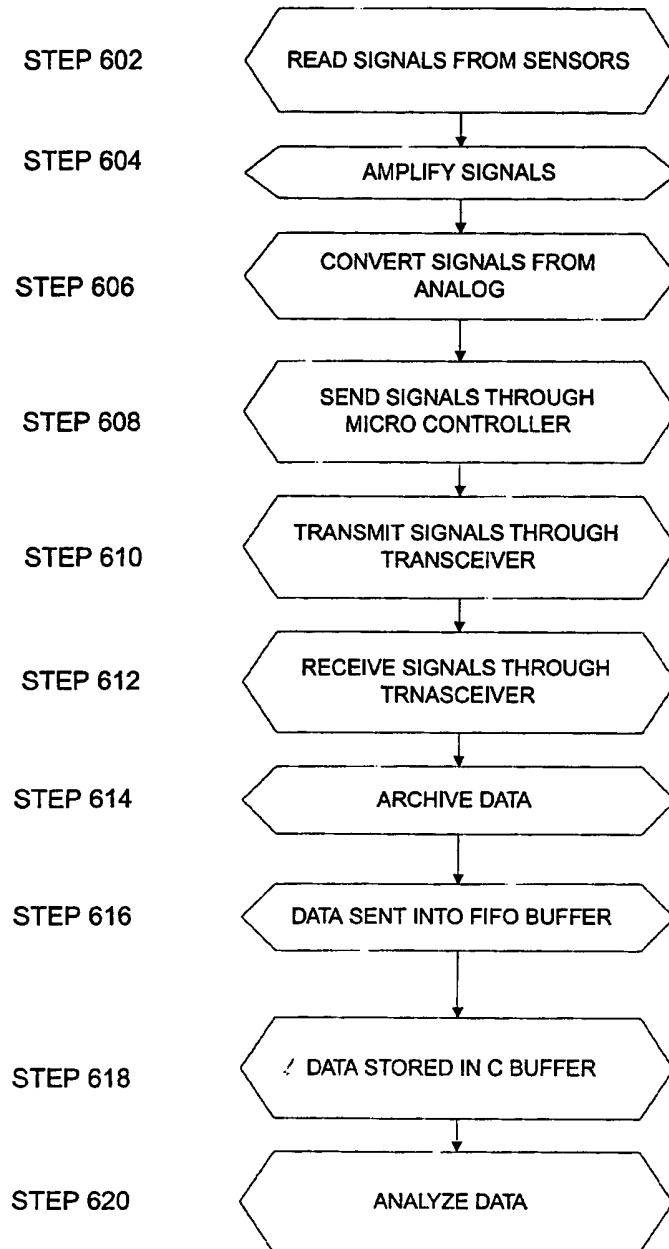
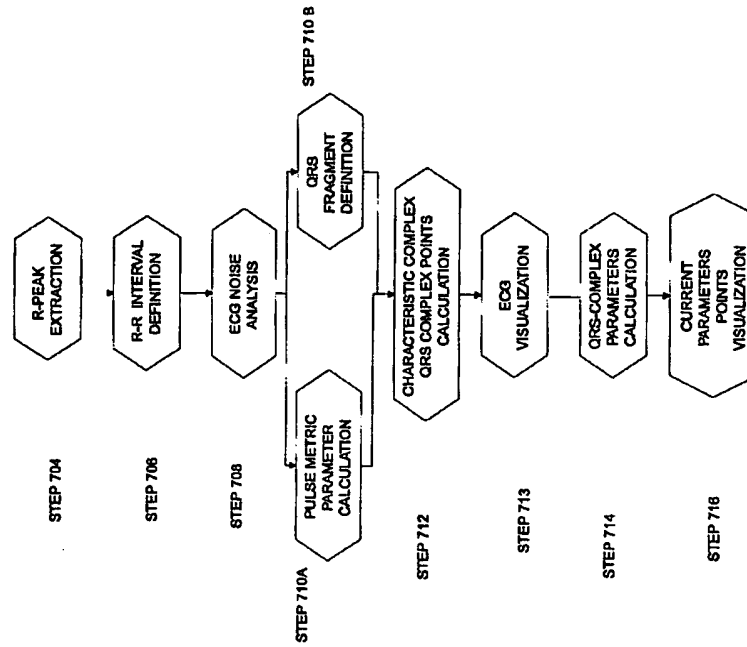


FIG. 6

FIG. 7A





**FIG. 7B**

STEP 712A

CALCULATION OF  
DOMINANT  
CHARACTERISTIC  
POINTS

STEP 712B

FILTERING AND  
SMOOTHING

STEP 712C

CALCULATION OF  
AUXILIARY  
CHARACTERISTIC  
POINTS

STEP 712D

CALCULATION OF ISOLINE

FIG. 8A

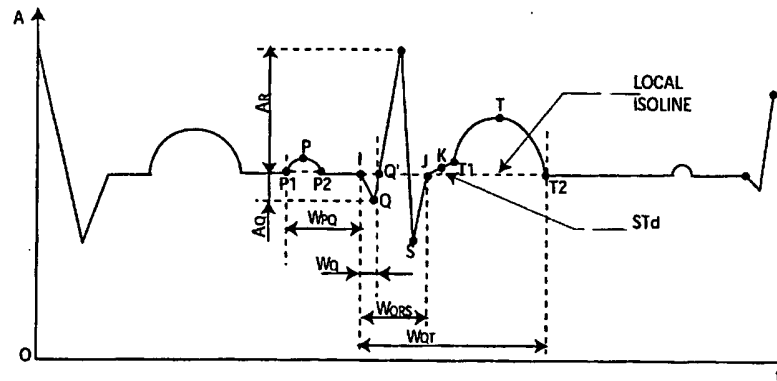
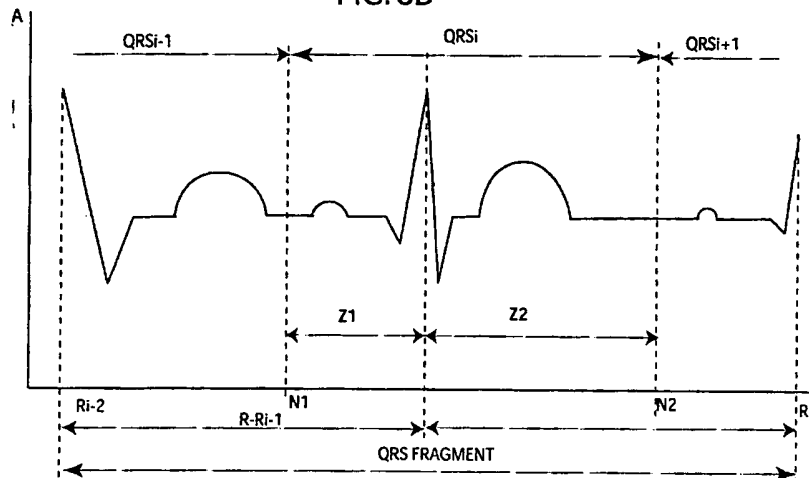


FIG. 8B



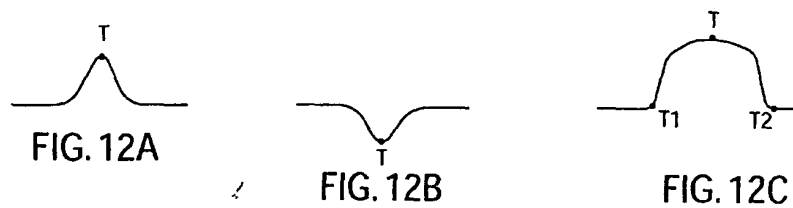
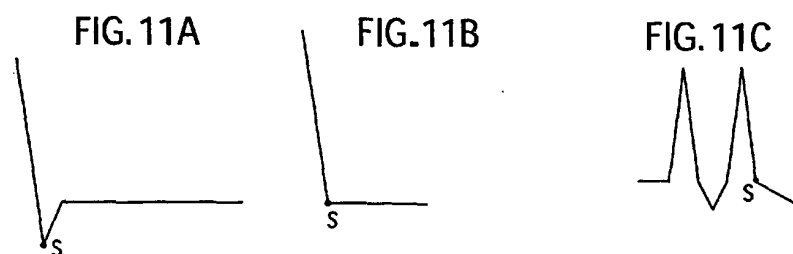
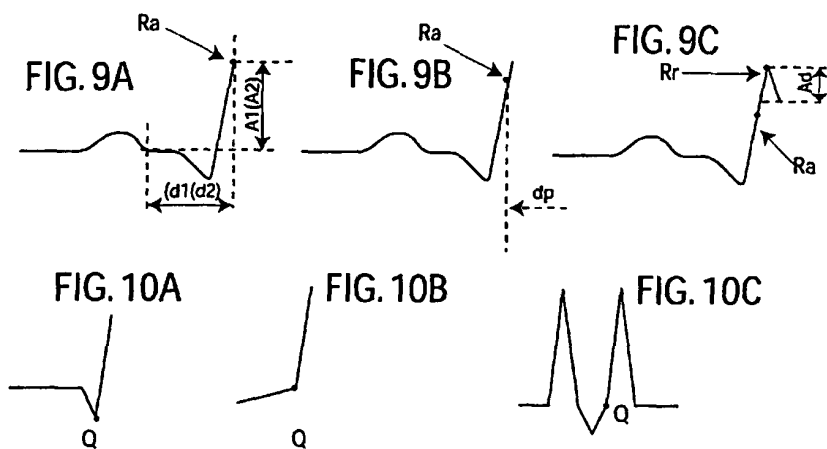


FIG. 13

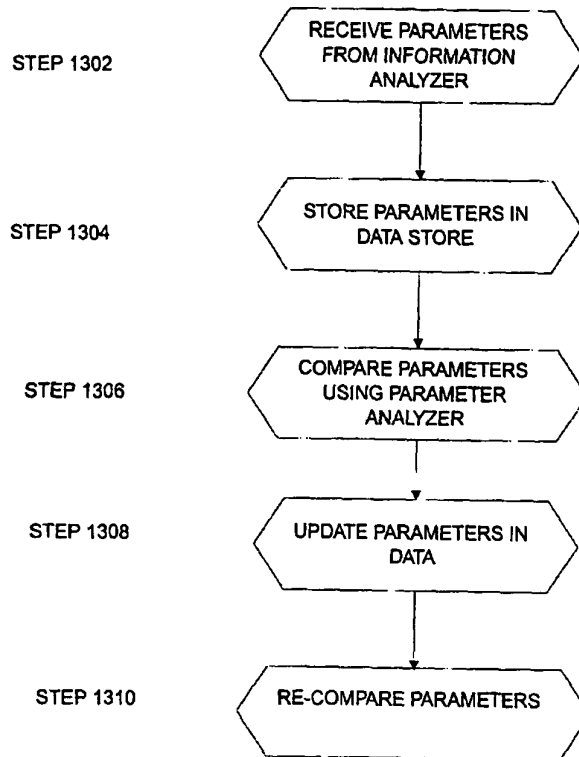


FIG. 14

| Parametric value   | Description   |
|--|---|
| Pulse rate   | Defined as average value of R-R- Interval of 4 last R-R- Intervals per 1 minute   |
| Immediate alteration of pulse rate                               | Defined as difference between Pulse Rate calculated for the last 4 R-R- Intervals and Pulse Rate calculated for previous 4 R-R- Intervals ( $i = N-7, \dots, N-4$ ):<br>$P_a = P_N - P_{N-3}$     |
| RR-Interval  | Defined as a distance between 2 consecutive R-Peak (ms)   |
| Premature beats  | The number of extrasystoles within last 10 seconds.   |
| Group of premature beats   | The number of consecutive extrasystoles   |
| The atrial fibrillation-flutter                                  | $F = (F1 + F2) \cdot X (\%)$ , where:<br>F1 – Extrasystole factor and F2 – Variability factor for the last 15 RR intervals  |
| ST-Segment depression/elevation                                  | Defined as a distance (mm) between point K and isoline of QRS-complex. Its value is averaged for last 10 QRS-complexes  |
| T-wave inversion   | Inversion of current T-peak is identified within localization of point T. Cardiac event "T-wave Inversion" is occurred if 4 consecutive inverse T-peak are received                               |
| Width of Q-wave  | Distance between point I and Q' in ms   |
| Ratio of amplitude Q-wave to amplitude R-wave                    | $A_{QR} = \frac{A_I - A_Q}{A_R - A_I} \cdot 100 \%$<br><br>$A_{QR}$ value is averaged for the last 5 QRS-complexes  |
| Amplitude of R-wave  | Defined as difference between absolute values of point R amplitude and point I amplitude:<br>$A_{RI} = (A_R - A_I) \cdot 0.2$ (mm)<br><br>$A_{RI}$ value is averaged for the last 5 QRS-complexes |
| Width of QT-Interval   | Defined as distance (ms) between point I of beginning of Q-peak and point T2-peak of the end of T-peak  |
| Width of QRS-complex   | Defined as the distance (ms) between point I and point J  |
| Width of PQ-Interval   | $W_{PQ}$ is defined as the distance (ms) between point P1 of beginning of P-peak and point I.<br><br>$W_{PQ}$ value is averaged for the last 5 QRS-complexes                                      |
| Standard deviation of the average normal-to-normal R-R intervals | Sinus node depolarization calculated over a period of 5 min   |

FIG. 15

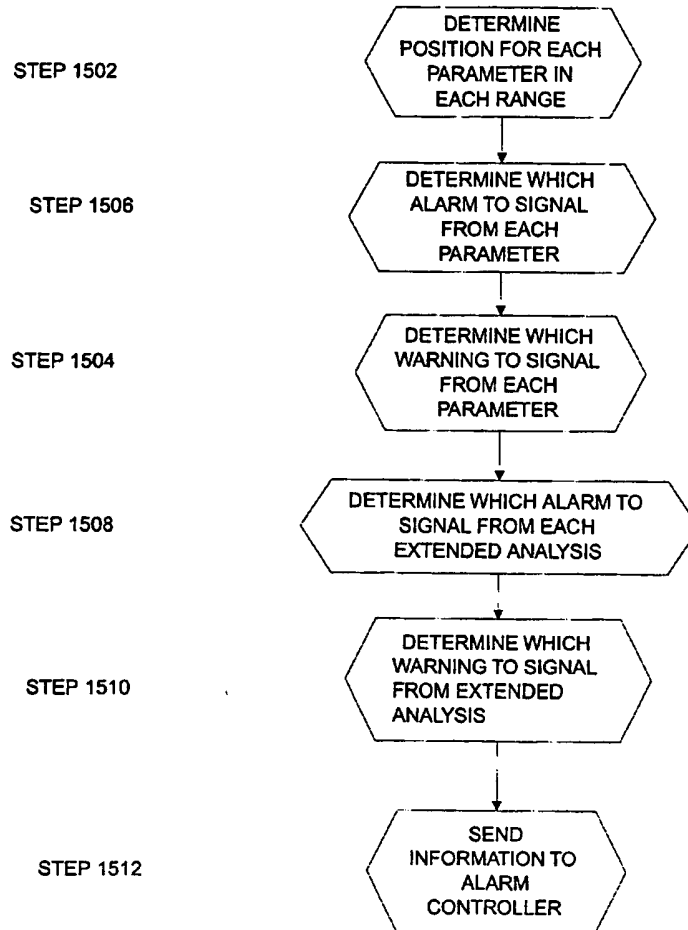


FIG. 16a. Typical threshold parameters values

| Warning           | Alarm             | Description  |
|-------------------|-------------------|--|
| W <sub>1</sub>    | A <sub>1</sub>    | Pulse rate less than 50/40 bpm (during 4 QRS complexes)                            |
| W <sub>2</sub>    | A <sub>2</sub>    | Pulse rate more than 140/160 bpm (during 4 QRS complexes)                          |
|                   | A <sub>3</sub>    | Immediate alteration of pulse rate up, more than 40 bpm (during 4 QRS complexes)   |
|                   | A <sub>4</sub>    | Immediate alteration of pulse rate down, more than 40 bpm (during 4 QRS complexes) |
|                   | A <sub>5</sub>    | R-R interval more than 2.5 sec   |
|                   | A <sub>6</sub>    | Premature beats, repeated more than 1 in 10 sec                                    |
|                   | A <sub>7</sub>    | 2 consecutive premature beats  |
| W <sub>8</sub>    | A <sub>8</sub>    | The atrial fibrillation-flutter > 20/30 %  |
| W <sub>9</sub>    | A <sub>9</sub>    | ST-segment depression > 1.0/1.5 mm, measured at 80 ms from J-point                 |
| W <sub>10</sub>   | A <sub>10</sub>   | ST-segment elevation > 1.5/2.0 mm, measured at 80 ms from J-point                  |
|                   | A <sub>11</sub>   | T wave inversion = 1   |
| W <sub>12</sub>   | A <sub>12</sub>   | Increase of Q wave > 30/40 ms  |
| W <sub>13</sub>   | A <sub>13</sub>   | Increase of Q/R amplitude ratio > 20/30 %  |
| W <sub>14</sub>   | A <sub>14</sub>   | Decreases of R-wave amplitude > 30/50 %  |
| W <sub>15</sub>   | A <sub>15</sub>   | Increase of QT interval > 450/500 ms   |
|                   | A <sub>16</sub>   | Sudden Increase of QT interval > 30 % from preceded                                |
| W <sub>17</sub>   | A <sub>17</sub>   | Increase of QRS duration > 110/120 ms  |
| W <sub>18</sub>   | A <sub>18</sub>   | Increase of PQ interval > 180/200 ms   |
|                   | GE <sub>A7</sub>  | Consecutive premature beats > 2  |
| ST <sub>W9</sub>  | ST <sub>A9</sub>  | ST-segment depression > 1.5/2.0 mm, measured at 80 ms from J-point                 |
| ST <sub>W10</sub> | ST <sub>A10</sub> | ST-segment elevation > 2.0/2.5 mm, measured at 80 ms from J-point                  |
| W <sub>G</sub>    | A <sub>G</sub>    | Integrated Relative Risk of SCD or development of Myocardial infarction > 1.8/2.5  |

FIG. 16b. Pulse-metric parameters

| Warning        | Alarm          | Description  |
|----------------|----------------|--|
| W <sub>1</sub> | A <sub>1</sub> | Pulse rate less than A <sub>1</sub> (W <sub>1</sub> ) bpm (during 4 QRS complexes)             |
| W <sub>2</sub> | A <sub>2</sub> | Pulse rate more than A <sub>2</sub> (W <sub>2</sub> ) bpm (during 4 QRS complexes)             |
|                | A <sub>3</sub> | Immediate alteration of pulse rate up, more than A <sub>3</sub> bpm (during 4 QRS complexes)   |
|                | A <sub>4</sub> | Immediate alteration of pulse rate down, more than A <sub>4</sub> bpm (during 4 QRS complexes) |
|                | A <sub>5</sub> | R-R interval more than A <sub>5</sub> sec  |
|                | A <sub>6</sub> | Premature beats, repeated more than A <sub>6</sub> in 10 sec                                   |
|                | A <sub>7</sub> | A <sub>7</sub> consecutive premature beats   |
| W <sub>8</sub> | A <sub>8</sub> | The atrial fibrillation-flutter > A <sub>8</sub> (W <sub>8</sub> ) %                           |

FIG. 16c. QRS parameters

| Warning  | Alarm    | Description  |
|----------|----------|--|
| $W_9$    | $A_9$    | ST-segment depression > $A_9(W_9)$ mm, measured at 80 ms from J-point      |
| $W_{10}$ | $A_{10}$ | ST-segment elevation > $A_{10}(W_{10})$ mm, measured at 80 ms from J-point |
|          | $A_{11}$ | T wave inversion = $A_{11}$  |
| $W_{12}$ | $A_{12}$ | Increase of Q wave > $A_{12}(W_{12})$ ms                                   |
| $W_{13}$ | $A_{13}$ | Increase of Q/R amplitude ratio > $A_{13}(W_{13})$ %                       |
| $W_{14}$ | $A_{14}$ | Decreases of R-wave amplitude > $A_{14}(W_{14})$ %                         |
| $W_{15}$ | $A_{15}$ | Increase of QT interval > $A_{15}(W_{15})$ ms                              |
|          | $A_{16}$ | Sudden Increase of QT interval > $A_{16}$ % from preceded                  |
| $W_{17}$ | $A_{17}$ | Increase of QRS duration > $A_{17}(W_{17})$ ms                             |
| $W_{18}$ | $A_{18}$ | Increase of PQ interval > $A_{18}(W_{18})$ ms                              |

FIG. 16d. Extended pulse-metric parameters

| Warning | Alarm     | Description                             |
|---------|-----------|---|
|         | $GE_{A7}$ | Consecutive premature beats > $GE_{A7}$ |

FIG. 16e. Extended QRS parameters

| Warning    | Alarm      | Description  |
|------------|------------|--|
| $ST_{W9}$  | $ST_{A9}$  | ST-segment depression > $ST_{A9}$ mm, measured at 80 ms from J-point |
| $ST_{W10}$ | $ST_{A10}$ | ST-segment elevation > $ST_{A10}$ mm, measured at 80 ms from J-point |

FIG. 16f. Integrated parameters

| Warning | Alarm | Description   |
|---------|-------|---|
| $W_6$   | $A_6$ | Integrated Relative Risk of SCD or development of Myocardial Infarction > $A_6$ |



FIG. 17

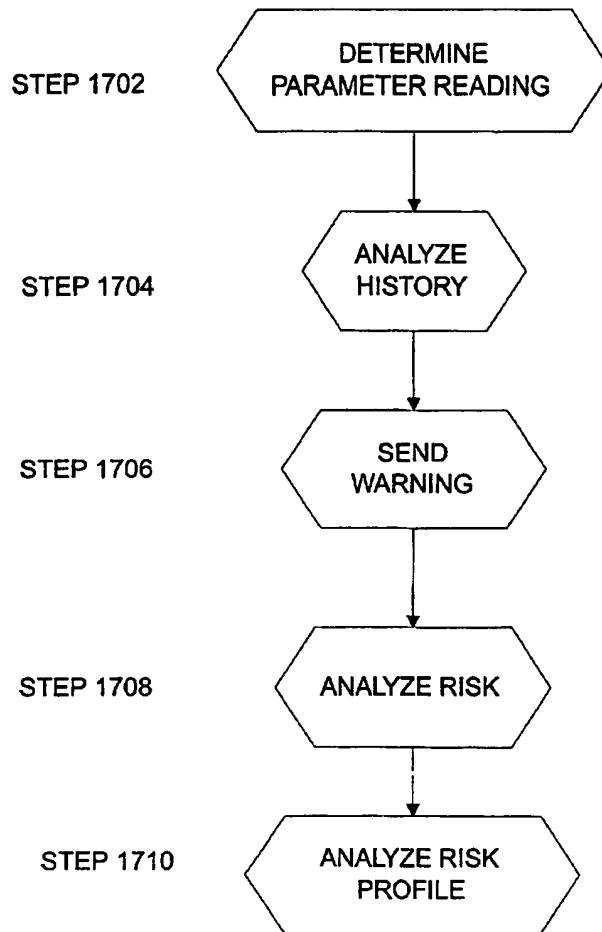


FIG. 18

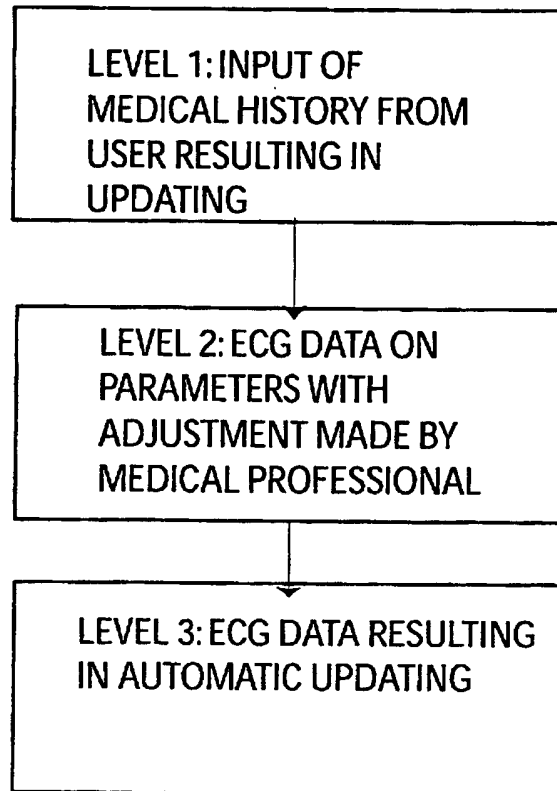


FIG. 19

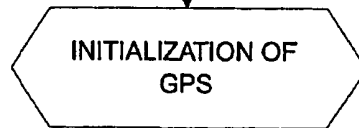
STEP 1902



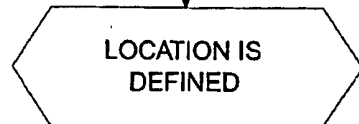
STEP 1904



STEP 1906



STEP 1908



STEP 1910

